

Amendments to the Claims

This listing of the claims will replace all prior versions and listings of the claims in the application.

Listing of Claims:

1. (currently amended) An upper electrode for supplying process gas onto a wafer in semiconductor device manufacturing equipment, comprising:

a plate electrode, and a plurality of nozzles integral with said plate electrode so as to inject process gas supplied at one side of the plate electrode into a processing chamber from the other side of the plate electrode, said nozzles being configured to inject the process gas at a flow rate that is higher overall at a peripheral portion of said plate electrode than at a central portion of said plate electrode located radially inwardly of the peripheral portion, one nozzle of the plurality of nozzles being disposed at the center of the electrode plate, the remainder of the nozzles being disposed in a plurality of concentric groups about the central nozzles, the nozzles in each group being spaced apart from one another by equal amounts, the intervals between the central nozzles in any one group and closest nozzles in an adjacent group being decreased in a direction from the center of the electrode plate toward the outer peripheral edge portion thereof.

2. (currently amended) The electrode as claimed in 1, wherein said plurality of nozzles are identical with respect to their configurations such that said nozzles will inject the process gas at equal flow rates, and the nozzles are disposed more densely at the outer peripheral portion of the plate electrode than at the central portion of the plate electrode.

3. (cancelled)

4. (currently amended) The electrode as claimed in 3, wherein ~~said nozzles at the peripheral portion of the electrode plate are arrayed in at least one concentric group centered about the nozzle at the central portion of the plate electrode, and the nozzles within each said group have the same configurations so as to inject the process gas at the same flow rate.~~

5. (currently amended) The electrode as claimed in 3, wherein ~~said nozzles at the peripheral portion of the plate electrode plate have through-holes that are larger than those of the nozzle at the central portion of the plate electrode.~~

6. (original) The apparatus as claimed in 3, wherein each of ~~said nozzles at the peripheral portion of the electrode plate has a number of through-holes greater than the number of the through holes of the nozzle at the central portion of the plate electrode.~~

7 - 8 (canceled).

9. (currently amended) Semiconductor manufacturing equipment, comprising:
a processing chamber;
a supply line through which process gas is supplied to said chamber;
a plurality nozzles being configured to inject the process gas at a flow rate that is higher overall at a peripheral portion of said plate electrode than at a central portion of said plate electrode located radially inwardly of the peripheral portion, one nozzle of the plurality of nozzles being disposed at the center of the electrode plate, the remainder of the nozzles being disposed in a plurality of concentric groups about the central nozzles, the nozzles in each group being spaced apart from one another by equal amounts, the intervals between the central nozzles in any one group and closest nozzles in an adjacent group being decreased in a direction from the center of the electrode plate toward the outer peripheral edge portion thereof

a central nozzle disposed at an upper part of said chamber;
a plurality of edge nozzles disposed at the upper part of said chamber at peripheral locations, respectively, disposed at equal intervals from each other along a circle whose center coincides with said central nozzle;

a controllable distributor operatively interposed between said supply line and said nozzles so as to control the flow of the process gas from the supply line to the nozzles;

an exhaust system connected to said processing chamber to create a vacuum within the chamber;

a pressure sensor that measures the pressure in the chamber interior;

a database that stores information regarding the processing of a wafer within said chamber; and

a controller operatively connected to said database so as to receive the information stored by the database, operatively connected to said pressure sensor and said exhaust system so as to control the exhaust system to regulate the pressure with the chamber on the basis of the pressure sensed by said sensor, and operatively connected to said distributor for controlling the distributor to regulate the flow of the process gas to said nozzles.

10. (currently amended) The equipment as claimed in 9, wherein the distributor comprises:

pipes diverging from the supply line and each connected to a respective one of the ~~central nozzle and the edge~~ nozzles; and

a control valve disposed in-line with the divergent pipes, and operatively connected to said controller.

11. (currently amended) The equipment as claimed in 10 9, wherein the distributor comprises:

a support plate disposed above said nozzles;

and control members supported by said support plate so as to be movable in a direction towards and away from said nozzles; and

an elevating mechanism operatively connected to said control members so as to position said control members relative to said control valve valves, said elevating mechanism being operatively connected to said controller.

12. (original) The equipment as claimed in 11, and further comprising a plate electrode with which said nozzles are integrated, said having a plurality of grooves extending from an upper surface thereof to each of said nozzles, respectively, and wherein each of said control members has a lower end having a shape corresponding to the shape of a respective one of said grooves and is disposed opposite thereto, whereby the control members can be seated in said grooves.

13-15 (canceled).